NASA CR-172,904

COSMIC

MAY MONTHLY REPORT

Computer Software Management and Information Center
112 Barrow Hall — University of Georgia — Athens, Georgia 30602

UNIVERSITY OF GEORGIA

COMPUTER SOFTWARE MANAGEMENT

AND

INFORMATION CENTER

MONTHLY PROGRESS REPORT

May, 1983

UNDER CONTRACT

NASW-3247

June 15, 1983

PREPARED FOR

TECHNOLOGY UTILIZATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D. C.

TABLE OF CONTENTS

1. GENERAL INFORMATION

The Eleventh NASTRAN Users' Colloquium was held in San Francisco during the first week of May. Over 90 government and industrial scientists were in attendance, and nineteen technical papers were presented. Also, NASTRAN short courses were given for the first time during the first three days at both the introductory and intermediate levels.

COSMIC exhibited at the DEXPO East 83, the Third National DEC-Compatible Industry Exposition, held in St. Louis on May 22-24. Approximately 700 people visited the COSMIC booth and over 80 people requested that their name be placed on our mailing list.

Two people visited COSMIC this month. Mr. Stefano Trumpy of CNUCE in Pisa, Italy was interested in trajectory determination software, and Mr. Neil Walker of TCG in Sydney, Australia was interested in a variety of software available from COSMIC.

2. INVENTORY

The current inventory of programs available from COSMIC is the sum of the Class 1 and Class 2 programs in TABLE 1. "Issuability Status Summary." The total number of items submitted from each source since COSMIC began is given in the right hand column of TABLE 1. Numbers listed under the "Withdrawn" column reflect those packages for which return or discard authorization has been provided by the appropriate Technology Utilization Office.

TABLE 1. ISSUABILITY STATUS SUMMARY

July 1966 to Date

Center Mnemonic	Class 1	Class 2	Class 3	Class 4	In Process	Withdrawn	Total
ARC	33	10	3	3	0	34	83
COS	0	17	0	1	0	65	83
DOD	0	49	4	1	0	30	84
ERC	0	0	0	0	0	13	13
ERL	6	7	0	0	0	1	14
FRC	5	6	0	0	0	4	15
GSC	82	41	5	2	2	221	353
HQN	15	10	0	0	0	72	97
KSC	5	22	0	1	0	81	109
LAR	172	60	0	4	1	81	318
LEW	139	77	0	3	2	87	308
MFS	95	109	1	6	3	1125	1339
MSC	88	141	3	0	7	793	1032
NPO	83	50	1	1	2	253	390
NUC	9	6	0	0	0	60	75
WLP	0	0	0	0	0	11	11
WSO	0	0	0	0	0	3	3
Totals	732	609	17	22	17	2934	4327

The number of submittals for the current month is above average. COSMIC received fourteen initial packages (program and documentation). Also, COSMIC received five update packages, one additional document, and one additional package. The total number of receipts for this month is twenty-one. A summary of the total number of receipts by submittal site is shown in TABLE 2.

TABLE 2. SUMMARY OF TOTAL RECEIPTS 1983

Submittal Site	This Month	Year to Date
ARC	0	0
COS	0	0
DOD	3	3
ERL	0	1
GSC	3	10
HQN	1	8
KSC	0	0
LAR	2	12
LEW	3	15
MFS	2	4
MSC	7	13
NPO	0	5
Total	21	71

3. EVALUATION AND PUBLICATION

The program processing activities can be viewed as a three step process, although the steps are not necessarily done in sequence. These steps are program verification, program evaluation, and abstract preparation and publication.

Program verification represents the machine processing phase of evaluation and typically includes the compilation or assembly of supplied code using standard programming language translators followed by loading or linkage editing of the generated object code to insure completeness of the submitted code. This month COSMIC processed twelve programs through verification.

Program Evaluation involves the review of programs and supporting documentation following the machine processing phase to determine their suitability for public release relative to the standards of completeness and content specified in the COSMIC Submittal Guidelines. Prices for distributed materials are also established during package evaluation. Factors considered in establishing the price charged for program code include the program source instruction counts as a gross measure of development effort, the machine independence or vintage, the quality of the supporting documentation, the known or assumed sales potential for the package, the functionality of the program relative to comparably classified packages, and the demonstrated level of developer programming support.

The program evaluation activity for the current month totaled 13 packages; seven Class 1, three Class 2, one Class 3, and two Class 4.

A cumulative tabulation of COSMIC evaluations since January 1, 1983, is given in TABLE 3.

TABLE 3. SUMMARY EVALUATION TOTALS

January 1983 to Date

Submittal Site	Class 1	Class 2	Class 3	Class 4
ARC	0	0	3	0
COS	0	0	0	0
DOD	0	2	3	1
ERC	0	0	0	0
ERL	1	0	0	0
GSC	7	0	4	2
HQN	8	0	0	0
KSC	0	0	0	1
LAR	10	0	0	0
LEW	9	0	0	5
MFS	1	0	4	2
MSC	4	2	3	0
NPO	5	0	4	0
NUC	0	0	0	0
WLP	0	0	0	0
Totals	45	4	21	11

Publication activities carried out by COSMIC include the preparation of descriptive abstracts for all new submittal and updated Class 1 and 2 items evaluated each month as well as the preparation of Tech Briefs for the Class 1 packages for publication in the NASA Tech Brief Journal.

Publication category codes and index terms are assigned to abstracts prepared by the activity. This month COSMIC prepared 7 abstracts and 4 Tech Briefs. A list of the titles for which Tech Briefs were prepared is given below:

TECH BRIEF ITEMS

LAR-13116 - SUBAERF - Aerodynamic Analysis of Low Speed Wing Flap Systems

LAR-13164 - PASCO - Structural Panel Analysis and Sizing Code (DEC VAX Version)

MSC-20589 - Computer Acquisition of Dynamic Stress/Strain Data

MSC-20633 - PLANS/PLUS - Programming Language for Allocation and Network Scheduling

COSMIC PROGRAM ABSTRACT

DOD-00084

DEGAUSSING PROGRAM 5
(Naval Ship Research and Development Center)

The Degaussing Program 5 was developed to determine the magnetic field caused by a combination of coils and dipoles. This program accepts input describing the sources of a magnetic field and calculates the magnetic fields and gradients at user specified points. The magnetic field sources may be coils, dipoles, or both. Coils are described as polygons with user assigned ampere-turn values. Dipoles are described in terms of the magnitude and orientation of their magnetic moments. The program is dimensioned to handle as many as 50 coils, 100 dipoles, and 200 field calculation points.

The program uses polygonal arc formulas to determine the contributions to the magnetic fields from the coil sources. Standard dipole formulas are used to determine the contributions from the dipole sources. The total magnetic field is determined at each user specified calculation point. The gradient calculations in the program simulate the operation of a magnetic gradiometer and determine the directional derivative of the magnetic field at each calculation point.

This program is written in FORTRAN IV for batch execution and has been implemented on a CDC 6000 series computer with a central memory of approximately 57K (octal) of 60 bit words. This program was developed in 1972.

LANGUAGE: FORTRAN IV

MACHINE REQUIREMENTS: CDC 6000 Series

PROGRAM SIZE: Approximately 1,410 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI EBCDIC Card Image Format Magnetic Tape

PROGRAM NUMBER: DOD-00084

DOCUMENTATION PRICE: $19.00 PROGRAM PRICE: $510.00

COSMIC PROGRAM ABSTRACT

DOD-00085

THE IRON BODY PROGRAM TO CALCULATE THE MAGNETIC FIELD FOR FERROMAGNETIC BODIES
(Naval Ship Research and Development Center)

The Iron Body computer program was developed to calculate the magnetic field due to a ferromagnetic body immersed in a constant inducing field. The program is capable of handling six types of bodies: solid sphere, spherical shell, solid prolate spheroid, prolate spheroidal shell, solid general ellipsoid, and general ellipsoidal shell. User input to the program includes the body type with physical and geometrical properties, the constant inducing field, and the calculation points. The magnetic field is determined by calculation of the magnetic scalar potential. Laplace's equation is solved by the method of separation of variables. For each body type, a coordinate system is selected such that the boundary surfaces are constants of one of the coordinates. Output from the program includes the magnitude and direction of the magnetic field at each of the specified calculation points.

This program is written in FORTRAN IV for batch execution and has been implemented on a CDC 6000 series computer with a central memory requirement of approximately 45K (octal) of 60 bit words. This program was developed in 1972.

LANGUAGE: FORTRAN IV

MACHINE REQUIREMENTS: CDC 6000 Series

PROGRAM SIZE: Approximately 2,210 Source Statement

DISTRIBUTION MEDIA: 9 Track 800 BPI EBCDIC Card Image Format Magnetic Tape

PROGRAM NUMBER: DOD-00085

DOCUMENTATION PRICE: $30.50 PROGRAM PRICE: $510.00

COSMIC PROGRAM ABSTRACT

LAR-13116

SUBAERF - AERODYNAMIC ANALYSIS OF LOW SPEED WING FLAP SYSTEMS
(Kentron International, Inc.)

The SUBAERF program was developed to provide for the aerodynamic analysis and design of low speed wing flap systems. SUBAERF is based on a linearized theory lifting surface solution. The low speed aerodynamic analysis method used in SUBAERF provides estimates of wing performance which include the effects of attainable leading-edge thrust and vortex lift. This basic aerodynamic analysis method has been improved to provide for the efficient and accurate treatment of simple leading-edge and trailing-edge flap systems. Flap geometry may be input directly by the user. The program provides for the simultaneous analysis of up to 25 pairs of leading-edge and trailing-edge flap deflection schedules.

The SUBAERF program is written in FORTRAN IV for batch execution and has been implemented on a CDC 6000 series computer with a central memory requirement of approximately 110K (octal) of 60 bit words. This program was developed in 1983.

LANGUAGE: FORTRAN IV

MACHINE REQUIREMENTS: CDC 6000 Series

PROGRAM SIZE: Approximately 1,190 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI CDC NOS Internal Format Magnetic Tape

PROGRAM NUMBER: LAR-13116

DOCUMENTATION PRICE: $26.00 PROGRAM PRICE: $545.00

COSMIC PROGRAM ABSTRACT

LAR-13164

PASCO - STRUCTURAL PANEL ANALYSIS AND SIZING CODE
(NASA Langley Research Center & Kentron International)

The Panel Analysis and Sizing Code (PASCO) was developed for the buckling and vibration analysis and sizing of prismatic structures having an arbitrary cross section. PASCO is primarily intended for analyzing and sizing stiffened panels made of laminated orthotropic materials and is of particular value in analyzing and sizing filamentary composite structures. When used in the analysis mode, PASCO calculates laminate stiffnesses, lamina stresses and strains (including the effects of temperature and panel bending), buckling loads, vibration frequencies, and overall panel stiffness. When used in the sizing mode, PASCO adjusts sizing variables to provide a low-mass panel design that carries a set of specified loadings without exceeding buckling or material strength allowables and that meets other design requirements such as upper and lower bounds on sizing variables, upper and lower bounds on overall bending, extensional and shear stiffnesses, and lower bounds on vibration frequencies.

Because of their wide application in aerospace structures, stiffened panels having several identical bays are given special emphasis in PASCO. The only restriction on configuration modeling is that the structure is assumed to be prismatic. In addition, it is assumed that loads and temperatures do not vary along the length of a panel. The panel cross section is composed of an arbitrary assemblage of thin, flat, rectangular plate elements that are connected together along their longitudinal edges. Each plate element consists of a balanced symmetric laminate of any number of layers of orthotropic material. Any group of element widths, layer thicknesses, and layer orientation angles may be selected as sizing variables. Substructuring is available to increase the efficiency of the analysis and to simplify the modeling of complicated structures.

The PASCO program is written in FORTRAN IV for batch execution and has been implemented on a DEC VAX 11/780 computer. The PASCO program was developed in 1981 and adapted to the DEC VAX in 1983.

LANGUAGE: FORTRAN IV

MACHINE REQUIREMENTS: DEC VAX 11/780

PROGRAM SIZE: Approximately 19,100 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI ASCII Card Image Format Magnetic Tape

PROGRAM NUMBER: LAR-13164

DOCUMENTATION PRICE: $43.50 PROGRAM PRICE: $1,720.00

COSMIC PROGRAM ABSTRACT

MSC-20589

COMPUTER ACQUISITION OF DYNAMIC STRESS/STRAIN DATA
(Rockwell International)

This computer program was developed to enable real time data acquisition and plotting of stress-vs-strain by a small, desk top computer system. The program monitors a load cell and multiple strain gages during tension or compression loading. The program scan routine is triggered by a specified change of applied load or longitudinal strain. The load cell and strain gage feedback voltages are converted to stress and micro-strain values which are displayed on the CRT, plotted, and stored. At the conclusion of the test, the program can plot the average back-to-back gage values from the longitudinal and the transverse gages. In addition, the program calculates the modulus of elasticity and the Poisson ratio. All data and specimen parameters may be printed and stored on magnetic disk. A replot routine enables the test data and specimen parameters to be recalled from disk, modified, and replotted with the same or different scales.

This program is written in BASIC for interactive execution and has been implemented on a Hewlett-Packard (HP) 9845 desk top computer. The data acquisition system also requires an HP 9872A plotter, an HP 3455A digital voltmeter, an HP 3495A scanner, a line printer, a disk drive, and signal conditioners. This program was developed in 1982.

LANGUAGE: BASIC

MACHINE REQUIREMENTS: HP9845

PROGRAM SIZE: Approximately 450 Source Statements

DISTRIBUTION MEDIA: Listing Available Only

PROGRAM NUMBER: MSC-20589

PRICE: $35.00

NOTE: The price includes program documentation and a program listing. The documentation is not sold separately from the program listing.

COMPUTER SOFTWARE MANAGEMENT AND INFORMATION CENTER
Computing and Information Services The University of Georgia
112 Barrow Hall, Athens, Georgia 30602, (404) 542-3265

COSMIC PROGRAM ABSTRACT

MSC-20633

PLANS/PLUS - PROGRAMMING LANGUAGE FOR ALLOCATION AND NETWORK SCHEDULING
(Science Applications, Inc.)

The Programming Language for Allocation and Network Scheduling, PLANS, was developed to provide NASA with a high-level language to handle the many scheduling requirements of the shuttle program. PLANS allows for the easy, direct expression of the kinds of functions frequently found in scheduling and resource allocation programs. PLANS achieves its function primarily due to its unique capability to dynamically manipulate tree data structures at execution time. Another important feature is the ability to establish a close correspondence between basic scheduling functional operations and PLANS statements, making design and maintenance of PLANS programs a relatively simple task. These powerful language features also make PLANS applicable to many areas in addition to scheduling. PLANS is not a special purpose language just for scheduling, it is a generalized, high-level tree manipulation language.

Although its capabilities have proven to be broadly applicable, PLANS was designed to overcome the inadequacies in existing languages being used to solve scheduling problems. PLANS allows the designer of experimental or constantly changing scheduling and resource allocation algorithms to translate his designs into working code directly from their basic functional descriptions. For large, logically complex scheduling problems, the simplicity of PLANS encourages the truly experimental approach which can offer the greatest promise of convergence to good solutions. Because it is intended to be used by problem area experts, rather than programming experts, the PLANS language has been designed to minimize functionally non-essential details. While PLANS provides quantitative capabilities, its emphasis is more on the manipulation of data structures, which is the principal activity performed in most scheduling algorithms. By eliminating the need for programming expertise and intermediate detailed program design, PLANS can significantly cut the cost and time required to develop scheduling and resource allocation programs.

The Program Library of Utilities for Scheduling, PLUS, is a collection of modules written in the PLANS language to provide a portion, or all, of the logic needed to construct a program to solve problems associated with scheduling and resource allocation. The PLUS modules are not constrained to any

particular application. They are methodological segments that may be used on any problem for which the corresponding methodology applies. The PLUS modules provide the PLANS programmer with a resource that can make the development of scheduling and resource allocation algorithms even easier.

The PLANS/PLUS processing system is written in FORTRAN 77 for batch execution and has been implemented on a UNIVAC 1100 series computer with a central memory requirement of approximately 55K of 36-bit words. The PLANS/PLUS system was last updated in 1981.

LANGUAGE: FORTRAN 77

MACHINE REQUIREMENTS: UNIVAC 1100 Series

PROGRAM SIZE: Approximately 6,050 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI UNIVAC FURPUR Format Magnetic Tape

PROGRAM NUMBER: MSC-20633

DOCUMENTATION PRICE: $99.00 PROGRAM PRICE: $1,575.00

COSMIC PROGRAM ABSTRACT

MSC-20643

FREQUENCY RESPONSE OF DIGITAL FILTERS
(Rockwell International)

This is a concise and simple program for determining the frequency response of digital filters. The program computes the gain and phase shift of a system of first and second order discrete-time filters. The computations are based on a procedure which uses Z-transforms to reduce the complex mathematical problem into a simple algebra problem. Input to the program consists of the determining values of the filters and a frequency. Output from the program includes an echo of the input and the gain and phase shift associated with the input frequency.

This program is written in BASIC for interactive execution and has been implemented on a Data General MV8000 computer. This program was developed in 1982.

LANGUAGE: BASIC

MACHINE REQUIREMENTS: Data General MV8000

PROGRAM SIZE: Approximately 235 Source Statements

DISTRIBUTION MEDIA: Listing Available Only

PROGRAM NUMBER: MSC-20643

PRICE: $25.00

NOTE: The price includes program documentation and a program listing. The documentation is not sold separately from the program listing.

COMPUTER SOFTWARE MANAGEMENT AND INFORMATION CENTER
Computing and Information Services The University of Georgia
112 Barrow Hall, Athens, Georgia 30602, (404) 542-3265

4. MARKETING

The marketing activities performed by COSMIC involve: solicitation of gratis advertisement of computer programs available from COSMIC in the technical press and trade journals; attendance at trade shows and professional society meetings to promote the services and software available from COSMIC; utilization of various media for the general promotion of COSMIC; utilization of benefits analysis reports to highlight COSMIC's technology transfer function; and preparation of abstract collections and program summaries.

A continuing marketing activity emphasized by COSMIC is the solicitation of gratis announcements of selected COSMIC programs in trade and technical publications. In May announcements about COSMIC products were published in:

Computers in Mechanical Engineering	1983 Catalog Information
IEEE Computer Magazine	Various Software Tools
Electronic Design	GSC-12827 SAMSAN
Computer Products	DEC-Compatible Software

A news release containing information about LEW-13393 CYBEAN, LEW-13626 SPHERBEAN, and LEW-12761 SHABERTH was mailed to the following publications:

Computers in Mechanical Engineering
Computer Aided Engineering
Consulting Engineer
Engineering Computer Applications Newsletter
Mechanical Engineering
Lubrication Engineering
ICP Interface - Manufacturing and Engineering
CAD/CAM Alert
Newsletter of Engineering Analysis Software
Rochester Engineering
Midwest Engineering

There have been 29 requests resulting from the announcement in Computer Products, 81 requests from Computers In Mechanical Engineering, and 167 requests from the April announcement of MSC-20423 The VAX Security Package in Datamation.

COSMIC exhibited at the DEXPO East 83 in St. Louis from May 22-24. Approximately 700 people visited the COSMIC booth and 88 people asked that their name be placed on COSMIC's mailing list. A special catalog of NASA software developed on DEC computers was distributed at the show, as well as COSMIC brochures and mailing list request cards.

COSMIC has approached the Survey Research Center (SRC) at the University of Georgia with the idea of conducting a survey of current COSMIC customers. The purpose of the survey will be to provide information which can aid the marketing and benefits analysis activities.

Two hundred and fifty COSMIC brochures were sent to Mr. Doug Morrison at the Laboratory for Applied Remote Sensing (LARS) at Purdue University for use at the "International Symposium on Image Processing" to be held in late June.

5. CUSTOMER SERVICE

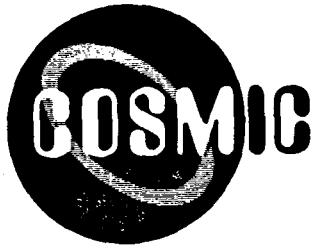
Customer Service provided by COSMIC, in addition to the distribution of program code and documentation, includes responding to requests for information. These requests may be in the form of telephone calls, letters, TECH BRIEF cards, mini-brochure cards, or trade show return cards. Generally the requested information concerns the services provided by COSMIC, or information on specific programs or groups of programs which may be available from COSMIC. During May, a total of 372 information requests were processed. This was divided into 347 domestic requests and 25 international requests.

One other area of Customer Service is the response to requests for information relevant to problems associated with a particular program product installation. These requests are usually handled jointly with the Technical Service Staff. After the customer problems have been resolved, a Problem Report Sheet is processed and added to the program package file for future reference. Four problem reports were processed this month.

During the month of May, a total of 178 customers representing 157 organizations received materials (programs, documentation, or catalogs) from COSMIC. Customers represent individuals, whereas, organizations represent corporations or institutions. These customers are located in 38 different states or territories. Both NASA and non-NASA disseminations are reflected in these statistics.

6. BENEFITS IDENTIFICATION

COSMIC follows an active campaign of interviewing previous customers in order to ascertain the utility of distributed programs and identify specific benefits accruing to users of these programs. Additionally, contact with customers is used to evaluate the services provided by COSMIC. When notable benefits are identified, they are documented in reports written by COSMIC staff which are then approved for public release by the customers. One benefits report was released for publication this month.



NASA
National
Aeronautics and
Space
Administration

SOFTWARE BENEFITS REPORT

The following report describes one application of software developed as part of a project funded by the National Aeronautics and Space Administration. The Computer Software Management and Information Center (COSMIC) operates as an extension of NASA's Technology Utilization Program to supply NASA computer programs to other agencies and the private sector. For additional information on this or other NASA software packages, call or write COSMIC.

Program Title: Hidden Line Computer Code

Program Number: ARC-11446

NASA Center: Dryden Flight Research Facility

The Lockheed-Georgia Company, headquartered in Marietta, Georgia, is actively involved in a variety of aerospace research and development projects. Since beginning operations in 1951, the company has built or modified more than 7,400 jet and propjet aircraft, including the C-5 Galaxy, the world's largest military aircraft. The company has also built the C-130 Hercules airlifter and the first fan-jet military cargo transport, the C-141 StarLifter.

Engineers at Lockheed-Georgia have made extensive use of a computer code supplied by COSMIC, the dissemination center for NASA software. The Hidden Line Computer Code, developed at the NASA Dryden Flight Research Facility, is used by several Lockheed departments to aid in generating

drawings of aircraft computer models. These models are combinations of individual panels that provide a three-dimensional representation of a particular aircraft component -- wing, tail, or nacelle, for example. A typical model may have 1,300 panels; some have as many as 2,500 connecting panels. An initial drawing may result in hundreds of extra lines. Removing the hidden lines results in drawings that have no ambiguities of perspective that can be misinterpreted. Engineers use these drawings to determine if the aircraft has been properly modeled.

After the model has been verified, aerodynamicists can use it to determine the air flow paths around the subject aircraft component. The airflow solutions obtained from such computer analysis are used to refine the aircraft design -- leading to improved aircraft performance, speed, and fuel efficiency.

The speed and accuracy of the Hidden Line Computer Code have resulted in reduced computer time and improved efficiency for Lockheed-Georgia's engineers. They report that the code is being used daily by engineers in Propulsion, Aerodynamics, Structures, and Scientific Computing. The company estimates a savings of approximately 1,000 dollars per week in reduced engineering manhours required to create and "debug" aerodynamic and structural computer models. In effect, they recover the purchase cost of the code every two days at current levels of use.

7. MAINTENANCE AND SUPPORT

The Eleventh NASTRAN Users' Colloquium was held at the Holiday Inn-Fisherman's Wharf in San Francisco, California on May 2-6, 1983. On Monday, Tuesday, and Wednesday (May 2-4) the following NASTRAN short courses were given:

Introduction to NASTRAN
Direct Matrix Abstraction Program (DMAP) in NASTRAN
Thermal Analysis Capability
Checkpoint/Restart in NASTRAN
Symmetry
Automated Multi-Stage Substructuring
Transient Analysis Capability
Enhancements to NASTRAN

Over ninety government and industrial scientists attended the short courses and the Colloquium. Nineteen technical papers and a progress report on the NASTRAN Maintenance Project were presented during the Colloquium.

The CDC version and the IBM version of the April 1983 Release of NASTRAN have been sent to current lessees. Sperry has completed the certification of the VAX version and the FORTRAN V UNIVAC version of the April 1983 Release of NASTRAN, and these will be shipped to lessees during June. Work is continuing on the ASCII UNIVAC version.

A meeting was held between Sperry and RPK personnel to finalize the new NASTRAN User's Manual. Sperry has begun the task of editing the documentation containing the new enhancements incorporated into the April 1983 version. The purpose of this task is to organize the documentation according to NASTRAN manual standards. This task is scheduled for completion by July 1.

TABLE 4 TOTAL DISSEMINATIONS

ITEM	Current Month VOLUME	Current Month VALUE	Year to Date VOLUME	Year to Date VALUE
A. ITEMS INVOICED				
1. Programs	36	$27,210.00	186	$162,481.25
2. Documentation	136	4,669.50	681	26,154.50
3. Leases (Initial)	1	7,000.00	24	91,670.00
4. Leases (Renewals)	5	21,280.00	26	98,770.00
5. Leases (Misc.)	3	1,050.00	10	2,951.14
6. Catalogs	93	2,305.00	712	16,565.00
7. Miscellaneous	7	174.12	74	2,808.99
TOTAL INVOICED		$63,688.62		$401,400.88
B. NASA (No Charge)				
1. Programs	8	$12,140.00	24	$ 26,200.00
2. Documentation	14	604.00	114	6,907.50
3. Leases (Initial)	4	16,680.00	6	23,480.00
4. Leases (Renewals)	-	-	12	41,340.00
5. Leases (Misc.)	-	-	-	-
6. Catalogs	2	20.00	49	570.00
7. Miscellaneous	-	-	1	100.00
TOTAL NASA		$29,444.00		$ 98,597.50
C. OTHER (No Charge)				
1. Catalogs	2	$ 20.00	17	$ 300.00
2. Replacements	-	-	4	1,608.00
3. Miscellaneous	-	-	-	-
TOTAL OTHER		$ 20.00		$ 1,908.00
GRAND TOTAL DISSEMINATION		$93,152.62		$501,906.38

TABLE 5 NASTRAN DISSEMINATIONS

Item	Current Month		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
A. ITEMS INVOICED				
1. Leases Initial	-	-	13	$ 52,920.00
2. Leases Renewals	5	$21,280.00	22	90,160.00
3. Leases Misc.	3	1,050.00	5	1,843.03
4. Documentation	8	585.00	91	4,915.00
5. Miscellaneous	-	-	3	161.20
TOTAL NASTRAN INVOICED		$22,915.00		$149,999.23
B. NASA (No charge)				
1. Leases Initial	3	$14,880.00	3	$ 14,880.00
2. Leases Renewals	-	-	11	38,640.00
3. Leases Misc.	-	-	-	-
4. Documentation	-	-	71	4,845.00
5. Miscellaneous	-	-	-	-
TOTAL NASA NASTRAN		$14,880.00		$ 58,365.00
GRAND TOTAL NASTRAN		$37,795.00		$208,364.23

TABLE 6 DISSEMINATION OF DOD SUBMITTALS

Item	Current		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
1. Programs	3	$1,220.00	13	$ 8,370.00
2. Documentation	6	154.50	29	689.00
TOTAL DISSEM. DOD SUBMITTALS		$1,374.50		$ 9,059.00

TABLE 7 FOREIGN DISSEMINATIONS

Item	Current		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
1. Programs	1	$ 670.00	34	$53,120.00
2. Documentation	7	324.00	77	5,701.00
3. Leases Initial	-	-	1	7,000.00
4. Leases Renewal	-	-	-	-
5. Leases Misc.	-	-	1	35.70
6. Catalogs	10	475.00	89	4,175.00
7. Miscellaneous	3	12.90	40	1,310.25
TOTAL FOREIGN DISSEM.		$1,481.90		$71,341.95

9. BUDGET SUMMARY

CONTRACT NASW-3247

	ESTIMATED EXPENDITURES		ACTUAL EXPENDITURES	
	Current Mo.	Cumulative	Current Mo.	Cumulative
PERSONNEL	20,673.00	103,365.00	20,431.59	106,569.84
OVERHEAD	19,584.00	97,920.00	13,140.10	62,732.71
STAFF BENEFITS	4,942.00	24,710.00	5,056.91	25,947.37
TRAVEL	1,719.00	8,595.00	2,358.63	8,841.17
EQUIPMENT PURCHASE	400.00	2,000.00	8,813.50	13,426.66
EQUIPMENT RENTAL				
Computer Usage	8,000.00	40,000.00	7,914.86	24,979.65
Misc. Equipment	1,853.00	9,265.00	1,597.24	4,121.05
MATERIALS & SUPPLIES	6,421.00	32,105.00	4,495.72	36,681.19
COMMUNICATIONS	1,206.00	6,030.00	1,378.81	7,045.71
OTHER				
Duplicating Expenses	-0-	-0-	-0-	-0-
Promotional Expenses	688.00	3,440.00	3,755.46	12,472.44
Microfiche Expenses	599.00	2,995.00	-0-	1,133.05
TOTALS	66,085.00	330,425.00	68,942.62	300,950.84
MAINTENANCE & SUPPORT EXPENSE	27,448.00	137,240.00	10,607.72	155,090.22
GRAND TOTALS	93,533.00	467,665.00	79,550.34	456,041.06

	ESTIMATED		ACTUAL	
	Current Mo.	Cumulative	Current Mo.	Cumulative
INCOME	65,145.00	325,725.00	51,689.38	410,392.42

End of Document